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DTR-7751 72-2889

23 JUL 1972

MEMORANDUM FOR: Deputy Director for Support

SUBJECT : CIA Information Science Training Program

1. This memorandum addresses the application of Information Science and Management Science to intelligence tasks and management. It concerns the training of intelligence professionals in Information Science and Management Science subject areas with true intelligence focus. It is submitted for the purpose of providing background information affecting questions of policy, staffing and funding and represents the current DTR view of the nature and desired objectives of this program.

2. Intelligence is essentially a special kind of information handling process which shares many of the principles, practices, and problems with other more ordinary information handling systems. Most intelligence tasks involve information handling in one form or another. The intelligence organization collects, researches, files, sorts, retrieves, compares, computes, interprets, analyzes, evaluates, collates, correlates, up-dates, revises, communicates, and disseminates information (intelligence). Many of the personnel who do this work are in reality, performing specialized information handling tasks. The body of knowledge and the methodology dealing with systematic and scientific solutions to these tasks are called Information Science and combine such approaches as Systems Analysis, Operations Research, and Computers Systems. Each approach utilizes such specific methods as Queuing, Network Analysis and Simulation. These approaches and methods are relevant to the intelligence process. For example, the analysis of rail, highway, inland waterway, airline and pipeline networks can be aided materially by the use of Network Analysis and Queuing Theory techniques. Similarly, the analysis of industrial production and associated military capabilities can be advanced with the use of Linear Programming, Correlation and Regression Analysis and Statistical Methods.

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3. Management Science refers to the application of Information Science to the management functions of planning, organizing, controlling and decision-making. Planning concerns itself with forecasting, particularly for long lead time intelligence projects such as those associated with new collection, production or communications systems. Often these systems will become operational five or more years hence and have a productive life of from five to fifteen years in the future. Therefore, forecasting is an essential element of planning. Although some inherent uncertainties will remain the best available forecasting methods should be utilized to include Modeling, Simulation, Correlation and Regression Analysis, Probability, Linear Programming and the Bayes Decision Method. Two of the major components of a Planning, Programming and Budgeting System are Systems Analysis and the Management Information System. Management Science concepts are essential to the evaluation of alternatives in supporting decision-making responsibilities of Management.

4. The applications of Information Science and Management Science can be both complex and simple. In efforts as intricate as those involved in the collection and production of intelligence, there will always be complex applications which will remain principally within the purview of the system specialist and a technical staff. It is equally true that there are a host of ordinary applications well within the capabilities of the non-system specialist. We believe that most professional employees of the Agency (perhaps as high as 80%) can, if properly trained, apply Information Science and Management Science methods in daily work routines with beneficial results. Additionally, the understanding of the methodology and the associated technology of Information Science acquired by the non-specialist in training will give him an appreciation of the "fit" of complex systems applications which may support or affect his area of responsibility. This understanding is essential to the effective collaboration of systems specialists and non-specialists in solving substantive intelligence problems. Training should enable the non-specialist (system user) to derive maximum benefits from the expensive, specialized systems available in the Agency. It will, then, be the purpose of the Information Science Training Program to promote the use of modern information handling systems and methodology in the Agency via practical, applied training programs for non-specialist, user personnel.

5. The applications of Information Science in the Agency have been highly specialized and somewhat limited. As a consequence many of our professional personnel, including managers and supervisors at all levels, are unaware of potential applications of modern scientific methods, do not understand the associated technology, and lack training in the use of

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either in the intelligence environment. Therefore, we are not optimistic that requirements for this training will stem from the recognized wants, or demands of customer offices. We should not expect to have customers demanding a training service that is neither well-known nor broadly understood. The utility, and subsequent recognition of needs will come only when the mystery and apprehensions surrounding the new methodology and technology are dealt with openly, and dispelled in an effective training program which clearly demonstrates the broad applicability of the subject matter to the substantive intelligence and support tasks of the Agency. A successful Information Science and Management Science Training Program in FY 1973 should assist materially in generating an awareness of the value of the program and subsequent demands for training services.

6. The limited participation of the Agency in the programs of the former Information Science Center (ISC) can be attributed in large part to three factors. In the first place, and despite concerted OTR efforts, many CIA managers and employees were unaware of the existance of the ISC program. Secondly, courses offered at the ISC tended to be much too lengthy and, a deterrent to broader participation. Thirdly, Agency participation was limited by an inter-agency quota system. Even so, since 1970 there has been a near unanimity of student participant opinion that the courses were highly useful. The Office of Finance has been particularly strong in its praise of the program even though the courses offered were not focused on their needs. Other graduates have been able to employ their learning in a variety of ways. A Foreign Missile and Space Analysis Officer (FMSAC) has used the SIPS/GIMS system to build FMSAC intelligence files and for on-line storage and retrieval. The same application has been employed to produce the Quarterly Foreign Missile and Space Activity Intelligence Summary. Another graduate has made unanticipated utilization of the SIPS/GIMS system, primarily a DDS support system, for intelligence production purposes. An Office of Scientific Research (OSR) officer has made an additional use of the [redacted] system for the analysis of ICBM capabilities. This system was developed originally to aid in the analysis of ground forces. Two Office of Finance officers have adapted the storage and retrieval and file building programs used in the ISC courses to the control of Agency financial records. A Clandestine Services Officer has completed a study applying Queuing Theory, Statistical Analysis and Probability to a routine task with an anticipated good results. He has also applied Sampling, Contents Analysis and Statistical Analysis to a reporting problem. Incidently, none of the examples required the development of costly new systems. They do suggest a variety of applications and illustrate the need for understanding and cooperation between user and system specialist if the potentials of existing systems are to be realized.

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7. Information Science training with direct intelligence focus cannot be obtained from any known outside source. It is not available from universities, consultants, manufacturers or at other Government or quasi-Government training facilities. We have reached this conclusion after reviewing the content of a large number of these programs. Furthermore, employees who have attended outside courses in this field have reflected a consistant view that the external courses, while excellent in themselves, are more relevant to industrial or to non-intelligence functions than they are to intelligence. ("A good course but it didn't apply to my job"). A recent contractor-managed one-week course in Systems Analysis and Operations Research was conducted in the Agency. This was primarily a course for "users" and was, in our view, a fine effort. However, during the week not a single intelligence related example or application was cited by the instructor. He was unfamiliar with Agency activities and simply could not know how the techniques applied to the responsibilities of the students. At best this leaves the student to guess at the relevance of the methods or, at worst, to reject them because applicability has not been shown. Over 15% of all Agency external training in CY 1972 was in some aspect of the Information Science. This indicates a search for knowledge of considerable magnitude. However, this inability to demonstrate convincingly the application of Information Science methods or technology to intelligence tasks using intelligence data and intelligence examples in lectures, demonstrations and exercises is a major limitation of the external training course. This is not to say that all external training in Information Science is without value. Graduate level courses can provide excellent theoretical foundations for system professionals who need to study advanced methods in great depth and thoroughness. Also external short courses may be highly useful for individuals with extensive systems backgrounds who need to learn specific techniques. Technical personnel at all levels will continue to require a variety of external training in hardware and software areas. External training has many useful applications but cannot meet the need to train intelligence personnel to use and apply systems methods to everyday intelligence tasks.

8. In FY 1973 the Information Science Training Program will remain in the former facilities of the ISC at the Defense Intelligence School. The program will be managed by CIA and two of the three assigned faculty members are from the Agency. The third faculty member is an NSA staff officer. Programs for broad Intelligence Community participation will be reduced in length and frequency. Concurrently, and for the first time, important blocs of instruction in Information Science and Management Science will be introduced into such selected OTR courses as the Senior Seminar and in the Midcareer, Intelligence and World Affairs, and Intelligence Production courses. We estimate that with the instructor and facility resources available to us in FY 1973 we will be able to provide approximately 23 weeks of instruction reaching a total of 620 students. Of this number as many as 540 students may be from CIA. All

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instruction in FY 1973 will continue to employ the highly effective, practical, "hands-on" training techniques still possible in the facilities of the Defense Intelligence School.

9. In FY 1974 the amount of programming will be directly related to the level of instructor staffing. If we are authorized but three instructors, we will be limited to a 23 training week level of effort with emphasis on the shorter, orientation-type courses and course segments scheduled for FY 1973. However, it is our strong view that the Agency will derive significantly greater benefits from a program which permits the scheduling of some longer training courses (six to eight weeks), and allows time for the development of basic skills on the part of the students. We know from our experience in the ISC program that graduates of such skills courses do learn Information Science methods in the longer courses and can apply these methods to intelligence tasks. However, a staff consisting of from five to seven instructors, and two to three secretarial/clerical personnel, will be necessary to support a program incorporating skills courses. Also, the kind of training that can be offered in FY 1974 will be conditioned by the nature of the facilities available for our use. It is unlikely that we will have access to the present Defense Intelligence School facility, complete with computer terminals and access to intelligence data banks, beyond FY 1973. It has been the consistent experience of the ISC programs that the most effective means of teaching Information Science is to employ practical, terminal "hands-on" teaching methods, not only in the skills courses but in orientation programs as well. Without terminal facilities we are relegated to orientation ("talk") courses of doubtful effectiveness. If an effective program is expected, the facilities should permit practical terminal work.

10. In summary the proposed Information Science Training Program may be defined in the following steps:

A. Requirements stem from Agency needs to apply the most advanced analytical methods to intelligence tasks to enable it to realize a maximum return from the large investments in information handling systems. Customer demands, or wants, are still ill-defined and probably will remain so until a broader base of Information Science knowledge prevails in the Agency.

B. Training will focus on the needs of the non-systems specialists (system users) to enable him to interface more effectively with systems specialists in areas of common concern and to understand the applications of Information Science methods to intelligence tasks.

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C. The training program will represent a structured sequence of courses for personnel of various levels with objectives ranging from simple orientation to the development of skills in the functional areas of intelligence collection and production, management, support and other more specialized tasks. Course lengths will vary with objectives.

D. Benefits will derive from the exposure of a significant number of Agency employees to new analytical methods applicable to a wide variety of Agency tasks.

11. We are aware that there is no magic in the Information Science or Management Science subject area that ensures success. We must provide high quality courses in appropriate facilities with highly qualified instructors. The acceptance and support of management must be gained at all levels. Information on the courses must reach prospective students and their supervisors in via effective and timely communications. Although, these goals are not easily achieved they are attainable and some considerable progress has been made. We believe the program is completely feasible.

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for: HUGH T. CUNNINGHAM
Director of Training

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